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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/635,945	08/10/2000	Setsuo Nakajima	SEL 203	5934

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EXAMINER

HU, SHOUXIANG

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/635,945

Applicant(s)

NAKAJIMA ET AL.

Examiner

Shouxiang Hu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,6,9,12 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 3,6,9,12 and 25-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 3, 6, 9, 12 and 25-30 are objected to because of the following informalities and/or defects:

Each of claims 3 and 25-30 recites the limitation of "a pixel electrode formed in contact with the insulating layer", but they fail to definitely define which of the two recited insulating layers ("an insulating layer" and "an interlayer insulating layer") the insulating layer here refers to. It is recommended to define these two insulating layers as a first and a second insulating layers, or as a gate insulating layer and an interlayer insulating layer.

In claims 3 and 25-30, the term of "one-conductive type impurity elements" should read as --elements of a first conductivity type--.

In claim 3 and 9, the term of "is comprising" should read as --comprises--.

In claim 9, the term of "an element" should read as --one of an element--; and all the terms of "or" should read as --and--.

Claim 3, 6, 9, 12 and 25-30 are further objected to as they fail to clearly recite the subject matters of the instant application that only a portion of the insulating layer (the first or gate insulating layer) is formed on the gate electrode; that only a portion of the insulating layer (the first or gate insulating layer) is comprised in the capacitor or near the contact hole. For example, in claims 3 and 25-30, the term of "an insulating layer

formed on the gate electrode" should read as --an insulating layer (or a first or a gate insulating layer), wherein a portion of said insulating layer (or said first or said gate insulating layer) is formed on said gate electrode--, because the first insulating layer is not entirely on the gate electrode.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 3, 6, 9, 12 and 25-30, as being best understood in view of the above claim objections, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. ("Lee"; US 6,008,065) in view of Kim (US 6,025,891) and/or Ikeda et al. ("Ikeda"; US 5,428,250).

Lee discloses a semiconductor device (Figs. 6 and 11), comprising: a substrate (20); a thin film transistor comprising a gate electrode (comprising a heat-resistant electrically conductive material, 24, Ti or Ta, see col. 5, lines 2-5; and a low-resistive electrically conductive material, 22, Al, see col. 4, lines 66-67), an insulating layer (26), a channel forming region in an amorphous semiconductor layer (28), and doped source and drain regions (30); an inorganic interlayer insulating layer (34); a pixel electrode (36); and, an input terminal portion including a first layer (24 and 22 in the D section)

comprising the same material as that of the gate electrode (24 and 22) and a second layer (36a) comprising the same material as that of the pixel electrode in contact with the first layer through a contact hole formed in the insulating layer (26).

It is noted that the substrate (20) in Lee is transparent (see col. 4, line 58); and one of ordinary skill in the art would readily recognize that it normally implies that the substrate is formed of a glass which normally inherently has an insulating surface.

Lee does not expressly disclose that the input portion is electrically connected to a wiring of another substrate, and that a portion of the pixel electrode can be in contact with the insulating film and forming a storage capacitor. However, one of ordinary skill in the art would readily recognize that the main purpose of forming an input terminal portion in the art is for facilitating the required external interconnection between an LCD's panel electrode and an output electrode of an external drive circuit through a wiring, as evidenced in Kim (see col. 1, lines 14-24). And, one of ordinary skill in the art would also readily recognize that a portion of the pixel electrode can be in contact with the insulating film and forming a storage capacitor structure for improving the LCD performance, as evidenced in Ikeda. Ikeda teaches to forming a TFT LCD device (Figs. 6-12), comprising a pixel electrode (10), wherein a portion of the pixel electrode (10) is in direct contact with a portion of the insulating layer (7) and forming a storage capacitor (13) with a capacitor wiring layer (6a, 6b, and/or 6c) comprising the same material as that of the gate electrode.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the external interconnection of Kim and/or

the pixel-electrode-comprised storage capacitor of Ikeda into the semiconductor device of Lee, so that an LCD device with required interconnection between the panel electrode and the external drive IC and with improved LCD performance would be obtained.

Regarding claim 12, one of ordinary skill in the art would readily recognize that a LCD type semiconductor device can be desirably used in a device capable of functioning as a television set, as evidenced in the prior art such as Tsuji et al. (5,821,622; see col. 1, lines 13-22).

Regarding claims 25 and 28-30, it is noted that Lee further teaches that the gate electrode layer (62 and 64 in Fig. 23) can have a tapered portion. And, so does Ikeda (see the gate electrode layer 6 in Figs. 6-12). Since each of the first layer and the capacitor wiring is formed together with the gate electrode layer in these prior art references, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the gate electrode, the first layer and the capacitor wiring in a same process step for simplifying the process. And, with the gate electrode having a tapered portion, the first layer and the capacitor wiring layer would then also have a tapered portion through such a simplified process.

Response to Arguments

3. Applicant's arguments filed on 8/13/02 have been fully considered but they are not persuasive.

Applicant's main arguments include that the contact hole in Lee is different than that of the claimed invention because the contact hole in Lee is formed in an insulating film and a protection, while the contact hole in the claimed invention is formed through the insulating layer. In response, it is noted that at least a portion of the contact hole in Lee is formed in a portion of the gate insulating layer (see layer 26 in Fig. 10), which enables the contact in Lee to be readable as a contact formed through a contact hole formed in the gate insulating layer, regardless whether the contact is also through any other contact hole(s) formed in any other layer(s). It appears that applicant's argument intend to imply that the claimed contact is only through a single contact hole formed only in the gate insulating layer. However, such features for the contact hole are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

4. Applicant's other arguments with respect to claims 3, 6, 12 and 25-30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2811

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is (703) 306-5729. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



SH
November 16, 2002